REMARKS

I. INTRODUCTION

In response to the Office Action dated January 5, 2005, please consider the following remarks.

II. STATUS OF CLAIMS

Claims 1-6, 8-14, 16-24, 26-34, and 36-62 are pending in the application.

Claims 19, 20, and 57-59 were rejected under 35 U.S.C. §102(e) as being anticipated in view of U.S. Publication Application No. US 2001/0013097 to Ito et al. (Ito), and these rejections are being appealed.

Claims 1, 2, 6, 8-10, 14, 16-18, 24, 26-30, 34, 36-40, 44-56, and 60-62 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of U.S. Patent No. 6,674,858 to Kimura et al. (Kimura), and these rejections are being appealed.

Claims 3-5, 11-13, 31-33, and 41-43 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Kimura and U.S. Publication Application No. US 2003/0011684, Narayanaswami et al. (Narayanaswami), and these rejections are being appealed.

Claims 21-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ito in view of Narayanaswami.

III. STATUS OF AMENDMENTS

No amendments to the claims have been made subsequent to the final Office Action.

IV. ISSUES PRESENTED FOR REVIEW

Whether claims 19, 20, and 57-59 are patentable under 35 U.S.C. §102(e) over U.S. Publication Application No. US 2001/0013097, issued to Ito et al. (hereinafter, the Ito reference).

Whether claims 1, 2, 6, 8-10, 14, 16-18, 24, 26-30, 34, 36-40, 44-56, and 60-62 are patentable under 35 U.S.C. § 103(a) over Ito, U.S. Patent No. 6,674,858, issued to Kimura et al. (hereinafter, the Kimura reference).

Whether claims 3-5, 11-13, 31-33, and 41-43 are patentable over 35 U.S.C. §103(a) over Ito

in view of Kimura and U.S. Publication Application No. US 2003/0011684, Narayanaswami et al. (hereinafter, the Narayanaswami reference).

Whether claims 21-23 are patentable over 35 U.S.C. §103(a) over Ito in view of Narayanaswami.

V. GROUPING OF CLAIMS

The rejected claims do not stand or fall together. Each claim is independently patentable. Separate arguments for the patentability of each claim are provided below.

VI. ARGUMENTS

A. The Cited References

1. The Ito Reference

After a digital content is loaded into an information terminal such as a PC, ID information unique to a viewer or a user of the PC is imprinted into the content. The ID information is imprinted into a predetermined location of the content or alternatively, it may be imprinted over the entire content in the form of a spatial frequency. The content with an ID added thereto is then enabled to be used in the terminal.

2. The Kimura Reference

A receiving device comprises a signal demodulator circuit for demodulating an encrypted video signal and attribute information including information for decoding an encryption, an attribute information identifying circuit for identifying and outputting the attribute information, and a descramble circuit for unscrambling the video signal obtained from the signal demodulator circuit, based on the output produced from the attribute information identifying circuit. A signal re-scrambled in accordance with a device ID signal is recorded in a recording and reproducing device. Further, the recording of the signal is controlled based on the output obtained from the attribute information identifying circuit.

3. The Narayanaswami Reference

An image capturing system and method for automatically watermarking a plurality of recorded camera and image parameters such as the location (latitude, longitude and altitude), orientation of the principal axis of the camera, whether the camera is in landscape mode or portrait mode, camera velocity, photographer information, time and date, zoom factor, shutter speed, flash on/off, autofocus distance, lightmeter reading, focal length and aperture into every captured image. This watermarked data can be subsequently extracted and compared with the originally recorded data so as to verify the authenticity of a corresponding image. Since the critical data is invisibly watermarked into the image, it is difficult to modify the image without affecting the watermarked data.

B. Claims 19, 20, and 57-59 are Patentable Over the Cited References Under 35 U.S.C. § 102(e)

The Final Office Action rejects claims 19, 20, and 57-59 as unpatentable under 35 U.S.C. § 102(e) over the Ito reference. The Applicants respectfully traverse these rejections.

With Respect to Claim 19: The Final Office Action rejected claim 19 as unpatentable over the Ito reference. The Applicants respectfully traverse. Claim 19 recites:

> *A program reception system comprising:*
> *a receiver for receiving transmitted data representing program content comprising multiple frames;*
> *means for modifying a frame of the data representing the program content to include multiple copies of receiver identification data; and*
> *means for providing the modified data representing the program content to a presentation device.*

The Final Office Action relies on the following portions of the Ito reference:

[0044] FIG. 8 is a diagram explaining a method for imprinting a bit pattern containing ID information, such as that shown in FIG. 7, onto the decoded image (the digital content). In this example, luminance values of the pixels of the decoded image are expressed in eight-bit binary data. The ID information is imprinted in the decoded image by replacing the LSB of the luminance value of each pixel by the value of the corresponding pixel in the bit pattern containing the ID information. Thus, in this example, the LSB of a pixel in the decoded image located in an area corresponding to a shaded area in FIG. 7 is replaced by "1", and the LSB of a pixel located in an area corresponding to a unshaded area in FIG. 7 is replaced by "0." The remaining seven bits of the luminance value of the pixel are unchanged from the decoded image. Thus, in this embodiment, an ID is imprinted over the entire image or an extended portion thereof. This method is advantageous as a countermeasure against partial cut-off of the content, as the extended portion over which the ID is imprinted may be chosen such that the cut off of which would substantially impair the usefulness of the content.

[0055] Eighth, although the ID information for one user is represented by one point in the frequency domain (FIG. 6), the ID information may be represented in other forms. For instance, a set of a plurality of discrete points or a two dimensional region may be employed to represent the ID information for one user.

[0049] Fourth, although an ID is imprinted into a lower bit irrespective of upper bits in the aforementioned embodiment, an offset may be given to a lower bit such that the whole data including upper bits contains the ID.

[0050] FIG. 13 shows an example of a 3×3 pixel area in a content such as an image, where the luminance of the respective pixels are "10, 8, 0 . . . " as shown. FIG. 14 is a diagram showing the luminance of the same 3×3 pixel area in the image, but expressed using modulo 3 arithmetic. Using this arithmetic, the corresponding value of a pixel whose luminance is 10, for instance, becomes 1. FIG. 15 is a diagram showing a sample data pattern representing ID information, generated using methods described earlier, to be imprinted into the 3×3 pixel area of the image shown in FIG. 14. The ID pattern is also expressed in modulo 3 arithmetic. In this example, 0's, 1's, and 2's are to be imprinted into the first, second, and third rows of pixels, respectively. FIG. 16 is a diagram showing the state in which an offset of −1, 0, or 1 is added to each pixel value of the 3×3 pixel area shown in FIG. 14 to obtain the corresponding pixel value of the 3×3 pixel area shown in FIG. 15. In operation, the ID information is imprinted into the 3×3 pixel area of the image shown in FIG. 13 by adding to each pixel an offset value −1, 0 or 1 according to the calculation shown in FIG. 16. According to this method, an offset is added to the luminance data as a whole, so that the whole data, including the upper bits, contain the ID.

According to the Office Action,

"Since the ID information can be attached to numerous pixels and groups of pixels, multiple copies of the ID are therefore inserted into one frame of programming data."

The Applicants respectfully disagree. The foregoing teaches inserting ID data into groups of pixels, it does not teach modifying a frame of the data representing program content to place *multiple copies* of the receiver ID data. Instead, it teaches spreading ID information among several pixels.

With Respect to Claims 57-58: Claim 57 recites a means for dividing the frame into a plurality of groups and for inserting a copy of the receiver identification data in each of the plurality of groups. Again, since Ito discloses spreading ID information among pixels, it does not teach, and in fact, teaches away from inserting more than one copy of the receiver data within a frame. Ito discloses dividing the frame into a plurality of groups and teaches inserting ID data into a group of pixels, but does not teach inserting a copy of the receiver identification data into *each* of the *plurality* of groups. Claim 58 is patentable for the same reasons.

C. Claims 1, 2, 6, 8-10, 14, 16,-18, 24, 26-30, 34, 36-40, 44-56, and 60-62 Are Patentable Over the Cited References Under 35 U.S.C. § 103(a)

Claims 1, 2, 6, 8-10, 14, 16,-18, 24, 26-30, 34, 36-40, 44-56, and 60-62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Kimura. The Applicants respectfully traverse these rejections.

1. Independent Claims 1, 9, 17, 18, 27, 37, and 44 are Patentable

With Respect to Claims 1, 9, and 27: Claim 1 recites

A television system comprising:
a receiver for receiving broadcast television content comprising multiple frames of data;
means for inserting multiple copies of receiver identification data into data representing a frame of the television content; and
means for generating a display of television images based upon the data representing the television content and the receiver identification data.

The First Office Action suggested that Ito disclosed "inserting multiple copies of the receiver identification data into data representing a frame of the television content" as follows:

> **[0047]** Second, although a still image is used in the above-described embodiments as an example of a digital content, the methods may be applied to other types of digital content, such as motion images (e.g. video) or audio content. For motion images, ID information may be divided into plural portions and different portions may be imprinted into different image frames. For audio content, the image decoder **14**, the display controller **20**, and the display **24** in **FIG. 3** may be replaced by an audio decoder, an audio output controller, and a speaker, respectively. Further, one-dimensional IFFT is sufficient for audio content, as it is one dimensional data. In addition, although ID information is imprinted into the bits of the luminance values in the case of images, it may be imprinted into the LSBs of frequency signals or the like in the case of an audio content.

The Applicants respectfully suggested that the foregoing teaches spreading ID information into several image frames, not placing multiple copies of ID information into a single frame, and that this teaches the opposite of the invention described in claim 1.

The Final Office Action replies:

> Examiner asserts that Ito shows the *ability* to insert multiple copies of the ID data into data representing a frame of the television content. Ito shows a number of ways of inserting ID data into a frame, including inserting the ID data into the luminance value of each pixel (page 3, sections 0044) and inserting the ID data into groups of pixels (i.e. 3x3 group of pixels) (page 3 sections 0049-0050, page 4 section 0055). Since the ID information *can be* attached to numerous pixels and groups of pixels, multiple copies of the ID are therefore inserted into one frame of programming data. (emphasis added)

The referenced portions of the Ito reference are presented below:

[0044] **FIG. 8** is a diagram explaining a method for imprinting a bit pattern containing ID information, such as that shown in **FIG. 7**, onto the decoded image (the digital content). In this example, luminance values of the pixels of the decoded image are expressed in eight-bit binary data. The ID information is imprinted in the decoded image by replacing the LSB of the luminance value of each pixel by the value of the corresponding pixel in the bit pattern containing the ID information. Thus, in this example, the LSB of a pixel in the decoded image located in an area corresponding to a shaded area in **FIG. 7** is replaced by "1", and the LSB of a pixel located in an area corresponding to a unshaded area in **FIG. 7** is replaced by "0." The remaining seven bits of the luminance value of the pixel are unchanged from the decoded image. Thus, in this embodiment, an ID is imprinted over the entire image or an extended portion thereof. This method is advantageous as a countermeasure against partial cut-off of the content, as the extended portion over which the ID is imprinted may be chosen such that the cut off of which would substantially impair the usefulness of the content.

[0055] Eighth, although the ID information for one user is represented by one point in the frequency domain (**FIG. 6**), the ID information may be represented in other forms. For instance, a set of a plurality of discrete points or a two dimensional region may be employed to represent the ID information for one user.

[0049] Fourth, although an ID is imprinted into a lower bit irrespective of upper bits in the aforementioned embodiment, an offset may be given to a lower bit such that the whole data including upper bits contains the ID.

[0050] **FIG. 13** shows an example of a 3×3 pixel area in a content such as an image, where the luminance of the respective pixels are "10, 8, 0 . . . " as shown. **FIG. 14** is a diagram showing the luminance of the same 3×3 pixel area in the image, but expressed using modulo 3 arithmetic. Using this arithmetic, the corresponding value of a pixel whose luminance is **10**, for instance, becomes **1**. **FIG. 15** is a diagram showing a sample data pattern representing ID information, generated using methods described earlier, to be imprinted into the 3×3 pixel area of the image shown in **FIG. 14**. The ID pattern is also expressed in modulo 3 arithmetic. In this example, 0's, 1's, and 2's are to be imprinted into the first, second, and third rows of pixels, respectively. **FIG. 16** is a diagram showing the state in which an offset of −1, 0, or 1 is added to each pixel value of the 3×3 pixel area shown in **FIG. 14** to obtain the corresponding pixel value of the 3×3 pixel area shown in **FIG. 15**. In operation, the ID information is imprinted into the 3×3 pixel area of the image shown in **FIG. 13** by adding to each pixel an offset value −1, 0 or 1 according to the calculation shown in **FIG. 16**. According to this method, an offset is added to the luminance data as a whole, so that the whole data, including the upper bits, contain the ID.

As the Final Office Action apparently recognizes, the Ito reference does not disclose a system that *actually inserts* multiple copies of receiver identification data into data representing a frame

of the television content, as recited in claim 1. Instead, the Final Office Action rejects claim 1 because it believes that it has the *ability* to be used to insert multiple copies of receiver identification into data representing a frame of the television content (or that it *can be* used this way).

However, the Ito reference does not even remotely suggest that it be *actually used* this way. It cannot be said that this is inherently disclosed, because Ito suggests the opposite ... splitting information for a single ID into several frames:

> **[0047]** Second, although a still image is used in the above-described embodiments as an example of a digital content, the methods may be applied to other types of digital content, such as motion images (e.g. video) or audio content. For motion images, ID information may be divided into plural portions and different portions may be imprinted into different image frames. For audio content, the image decoder 14, the display controller 20, and the display 24 in FIG. 3 may be replaced by an audio decoder, an audio output controller, and a speaker, respectively. Further, one-dimensional IFFT is sufficient for audio content, as it is one dimensional data. In addition, although ID information is imprinted into the bits of the luminance values in the case of images, it may be imprinted into the LSBs of frequency signals or the like in the case of an audio content.

Inherency "may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269(Fed. Cir. 1991). Instead, to establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co.*, 948 F.2d at 1268.

Likewise, because Ito teaches splitting information for a single ID among a plurality of frames, Ito teaches away from the Applicant's invention.

It is improper to reject a claim based upon speculation of what how the system of a cited reference *might* be used. Instead, the cited reference must expressly or inherently disclose the feature, or there must at least be a suggestion to modify that reference to arrive at the Applicant's invention. The Ito reference fails to do any of these things. Accordingly, the Applicants respectfully traverse.

Claims 9 and 27 recite analogous features and is patentable for the same reasons.

With Respect to Claim 17: Claim 17 recites a controller that embeds multiple copies of the

identification data into the first image frame. As discussed above, the Ito reference fails to disclose or discuss this feature. Claim 17 is therefore patentable over the cited references.

With Respect to Claim 18: Claim 18 recites modifying a subset of pixel data to insert multiple copies of the identification data. As described above, Ito fails to disclose this feature.

With Respect to Claim 37: Claim 37 recites a controller for modifying a portion of a frame according to *multiple copies* of the receiver identification data. As described above, Ito fails to disclose this feature

With Respect to Claim 44: Claim 44 recites the step of modifying a frame of the data representing the program content to include multiple copies of the receiver identification data. As described above, Ito fails to disclose this feature.

2. Dependent Claims 2-5, 8, 10-14, 16, 20-24, 26, 28-34, 36, 38-43, and 45-62 are Patentable

With Respect to Claims 3, 4, 11, 12, 21, 22, 31, 32, 41, and 42: Claim 3 recites that the receiver identification data includes a date stamp representing the date that the receiver identification data was inserted into the data representing the television content. Claim 4 recites a similar feature, but with respect to a time stamp. The Final Office Action indicates that these features are found in the following portion of the Narayanaswami reference:

> **[0004]** It is often necessary to determine the conditions and circumstances (such as time, date, and location) in connection with the capturing of an image. For instance, such information can be of immense value to insurance agencies (e.g., real-estate, auto, and fire), hospitals, news agencies and crime investigating agencies, for confirming the details surrounding an accident so as to assist in the investigation of the accident and preparing the necessary accident reports. Moreover, this information would also be useful for image search algorithms that are based on such information. Therefore, an image capturing device which can automatically record a plurality of parameters with each captured image, such as names of geographic locations, altitude, longitude, time, date, photographer identification, as well as image data such as light intensity, shutter speed and flash status, would be very useful to such agencies.
>
> **[0005]** Furthermore, an image capturing system which could automatically watermark (i.e., hide) the plurality of recorded parameters into each image would be useful for verifying the authenticity of digital pictures, as well as verifying and confirming the circumstances and conditions surrounding the capturing of the digital image. In general, the ability to prove the authenticity of digital images is a burdensome task because there are various commercially available software applications which allow users to manipulate and modify digital images. Therefore, by invisibly watermarking parameters associated with a digital image within the image, the authenticity of the digital image may subsequently be verified by extracting the watermarked parameters and then comparing the extracted parameters with the initially recorded parameters to determine whether they are similar.

However, the foregoing discloses imprinting the date that the image was created, not the *date that the receiver identification was inserted into the data representing the television content* as recited in the claim. Accordingly, the Applicant respectfully traverses these rejections.

Claims 11, 12, 31, 32, 41, and 42 recite analogous features and are patentable for the same reasons.

With Respect to Claims 5, 13, 23, 33, and 43: These claims recite that the receiver identification data is obtained from a removable access card having billing data. The Final Office Action acknowledges that none of the cited references disclose this feature, but that it would be

obvious to modify Ito and Kimura to result in the "ability to use a removable access card so that users could easily be changed by swiping their individual cards."

The Applicants suggest that this rejection is the result of hindsight reconstruction. The Applicants do not understand how "changing users" is relevant to the Applicants invention. The meaning of "changing users" is not clear, but whatever its meaning, the use of an access card to "change users" does not necessitate or teach that the receiver ID be stored within the card, nor has the Final Office Action suggested so.

With Respect to Claim 6, 14, 24, and 34: Claim 6 recites that the receiver identification data is inserted into the data representing the television content by modifying the saturation data of the television content. The Final Office Action asserts that this is disclosed as follows,

> **[0038] FIG. 4 is a diagram showing an internal structure of the ID imprinter 18 shown in FIG. 3 according to one embodiment of the present invention. The imprinter 18 comprises an ID reader 30 for reading an ID from the ID holder 16, a decoded image reader 32 for reading a decoded image, and a combiner 34 for imprinting an ID into a predetermined location such as the leading, middle, or trailing part of the decoded image data. When an ID consists of n bits of data and the luminance of image pixels in the content is expressed in multiscale, the combiner 34 for instance sequentially replaces the least significant bits (LSBs) of the luminance of n pixels from the leading part of the image by the n bits of ID data.**

However, as described in the Applicant's specification at page 9, lines 1-3, "luminescence data" is not "saturation data". Ito again teaches away from the Applicants' invention.

The analysis of claims 14, 24, and 34 is analogous.

With Respect to Claim 8,16, 26, 36: Claim 8 recites that the receiver identification data is inserted into data representing the program guide images prior to their display rather than television content. The Final Office Action:

1. Acknowledges that Ito and Kimura fail to show displaying program guide data;
2. Takes Official Notice that it is well known and expected in the art to display program guide data on a screen;
3. Argues that it would have been obvious to modify Ito and Kimura to show EPG data;
4. Concludes that since all frames of the Ito system are embedded with the receiver ID data before display, it is inherent that the EPG frames would contain receiver data as well.

The Applicants respectfully traverse and answer:

1. It is certainly well known in the art to display program guides on a screen in systems that simultaneously broadcast a plurality of programs. However, Ito is not such a system.

2. Ito and Kimura both teach watermarking copyrighted program material so as to track any unauthorized dissemination of that material. Claim 8 is directed to watermarking *program guide information*, which is typically freely disseminated. Watermarking *program guide material* runs contrary to what is taught by both Ito and Kimura and any other art the Applicants are aware of.

3. The Final Office Action's inherency argument inappropriately relies on disclosure material that is plainly not there. Even if it were true that "*all frames* of the ITO system" are embedded with the receiver ID before display (the Final Office Action provides no reference for this claim), it is inappropriate to use an obviousness argument to add new material to those frames (the program guide information) and then reject the claim based on speculation that those "all frames" (now including program guide data) must therefore include a receiver ID.

Such bootstrapping arguments lead one to plainly erroneous conclusions. For example, consider the case of a disclosure of a motorcycle. It might be obvious to add a sidecar, and everyone knows that motorcycles inherently include engines. Using the same rationale as the Final Office Action, that would mean that sidecars inherently possess engines as well.

The analysis of claim 16, 26, and 36 is analogous.

With Respect to Claims 45, 46, 48, 49, 51, 52, 54, 55, 57, 58, 60, and 61 : Claim 45 recites a means for dividing the frame into a plurality of groups and for inserting a copy of the receiver identification data in each of the plurality of groups. Again, since Ito discloses spreading ID information among pixels, it does not teach, and in fact, teaches away from inserting more than one copy of the receiver data within a frame. Ito discloses dividing the frame into a plurality of groups and teaches inserting ID data into a group of pixels, but does not teach inserting a copy of the receiver identification data into *each* of the *plurality* of groups. Claim 46 recites each of the groups comprises a plurality of lines and is patentable for the same reasons. Claims 48, 49, 51, 52, 54, 55, 57, 58, 60, and 61 recite features analogous to those of claims 45 and 46 and are patentable as well.

With Respect to Claims 47, 50, 53, 56, 59, and 62: Claim 47 recites that the plurality of lines recited in claim 46 each comprises a plurality of pixels, and also recites that means for repeatedly substituting a bit of the receiver identification data for a bit of a pixel in the line and skipping a plurality of pixels, for each of the lines in the group. The Office Action argues that the "skipping" feature is disclosed by Ito because it teaches modulo 3 arithmetic" that *can* add 0 to the pixel value, which does not change the value and substantially skips a pixel. Respectfully, adding a zero to a pixel is not analogous to skipping a pixel. The same result may be achieved, but not the same way. The analysis of claims 50, 53, 56, 59, and 62 is analogous.

VII. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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